

Engineering Interpretations

Soil Features

This table gives estimates of several important soil features which are used in land use planning that involves engineering considerations. Soil features which are covered include bedrock depth and hardness, cemented pan depth and hardness, subsidence, potential frost action, and risk of corrosion for uncoated steel or for concrete.

DEPTH TO BEDROCK - This value is given if bedrock is within a depth of 60 inches. The depth is based on many soil borings and observations made during soil mapping. The rock is specified as either soft or hard. If the rock is soft, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

CEMENTED PAN - Cemented pan is a nearly continuous layer of indurated or strongly cemented material having a hard, brittle consistency because the particles are held together by cementing substances such as, calcium carbonate, or oxides of silicon, iron, or aluminum. These layers are identified when they occur within a depth of 60 inches. Pans are classified as "thin" or "thick." "Thin" cemented pans are thin enough so that excavations can be made with trenching machines, backhoes, or small rippers and other equipment common to construction of pipelines, sewer lines, cemeteries, and the like. "Thick" cemented pans are sufficiently thick or massive to require blasting or special equipment beyond which is considered normal in excavating for this type of construction.

SUBSIDENCE - Subsidence potential is the maximum possible loss of surface elevation from the drainage of wet soils having organic layers or semi-fluid mineral layers. Estimates of the depth of subsidence (in inches) that takes place soon after drainage (initial subsidence) and after oxidation (total subsidence) are given for soils that are likely to subside.

POTENTIAL FROST ACTION - This is the likelihood of upward or lateral movement of soil by the formation of segregated ice lenses (frost heave) and the subsequent loss of soil strength upon thawing. The following classes are used in regions where frost action is a potential problem: (1) Low -- soils are rarely susceptible to the formation of ice lenses, (2) Moderate -- soils are susceptible to the formation of ice lenses, resulting in frost heave and subsequent loss of soil strength, and (3) High -- soils are highly susceptible to the formation of ice lenses, resulting in frost heave and subsequent loss of soil strength.

RISK OF CORROSION - Various metals and other materials corrode when on or in the soil, and some metals and materials corrode more rapidly when in contact with specific soils than when in contact with others. Corrosivity ratings are given for two of the common structural materials, uncoated steel and concrete. The risk of corrosion classes are low, moderate, and high.

This subsection includes:

- (a) **Soil Features**

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
BaB: Barco-----	Bedrock (paralithic)	20-40	---	---	0	0	None	Low	Moderate
BaC: Barco-----	Bedrock (paralithic)	20-40	---	---	0	0	None	Low	Moderate
Bk: Blackoar-----	---	---	---	---	0	---	High	High	Low
BoC2: Bolivar-----	Bedrock (lithic)	20-40	---	---	0	0	None	Low	Moderate
BoD2: Bolivar-----	Bedrock (lithic)	20-40	---	---	0	0	None	Low	Moderate
Br: Bremer-----	---	---	---	---	0	0	High	Moderate	Moderate
DpB: Deepwater-----	---	---	---	---	0	0	None	High	Moderate
DpC2: Deepwater-----	---	---	---	---	0	0	None	High	Moderate
Dt: Dockery-----	---	---	---	---	0	---	High	Moderate	Low
Fs: Freeburg-----	---	---	---	---	0	---	High	High	High
GoC2: Gorin-----	---	---	---	---	0	---	High	High	Moderate
Hg: Haig-----	---	---	---	---	0	0	High	High	Moderate
Hp: Haplaquents-----	---	---	---	---	---	---	---	---	---
Urban Land-----	---	---	---	---	0	---	None	---	---

Table K2.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
HtA: Hartwell-----	---	---	---	---	0	---	None	High	Moderate
HtB2: Hartwell-----	---	---	---	---	0	---	None	High	Moderate
HxC: Higginsville-----	---	---	---	---	0	---	High	Moderate	Moderate
Ka: Kanima-----	---	---	---	---	0	---	None	Moderate	Low
Lg: Lightning Silt Loam----	---	---	---	---	0	0	None	High	Moderate
MaB: Macksburg-----	---	---	---	---	0	---	High	High	Moderate
MdB: Mandeville-----	Bedrock (paralithic)	20-40	---	---	0	---	Moderate	Low	Moderate
MdC: Mandeville-----	Bedrock (paralithic)	20-40	---	---	0	---	Moderate	Low	Moderate
Nd: Nodaway-----	---	---	---	---	0	---	High	Moderate	Low
NoD: Norris-----	Bedrock (paralithic)	4-20	---	---	0	---	Moderate	Low	High
NoF: Norris-----	Bedrock (paralithic)	4-20	---	---	0	---	Moderate	Low	High
Pd: Pits-----	---	---	---	---	0	---	None	---	---
PoB: Polo-----	---	---	---	---	0	---	Moderate	Moderate	Moderate
PoC2: Polo-----	---	---	---	---	0	---	Moderate	Moderate	Moderate

Table K2.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
SaB: Sampsel-----	---	---	---	---	0	---	High	High	Low
SaC: Sampsel-----	---	---	---	---	0	---	High	High	Low
SaC3: Sampsel-----	---	---	---	---	0	---	High	High	Low
ShB: Sharpsburg-----	---	---	---	---	0	---	High	Moderate	Moderate
SnD2: Snead-----	Bedrock (paralithic)	20-40	---	---	0	---	Moderate	High	Low
SoD: Snead-----	Bedrock (paralithic)	20-40	---	---	0	---	Moderate	High	Low
Rock Outcrop-----	Bedrock (lithic)	0-60	---	---	0	---	None	---	---
SoF: Snead-----	Bedrock (paralithic)	20-40	---	---	0	---	Moderate	High	Low
Rock Outcrop-----	Bedrock (lithic)	0-60	---	---	0	---	None	---	---
W: Water-----	---	---	---	---	---	---	---	---	---
Wa: Wabash-----	---	---	---	---	0	---	Moderate	High	Moderate
WdB: Weller-----	---	---	---	---	0	---	High	High	High
WfB: Winfield-----	---	---	---	---	0	---	High	Moderate	Moderate
WfC: Winfield-----	---	---	---	---	0	---	High	Moderate	Moderate
WfC3: Winfield-----	---	---	---	---	0	---	High	Moderate	Moderate

Table K2.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
Zk: Zook-----	---	In ---	In ---	---	In 0	In ---	High	High	Moderate

